

REMARKS

Claims 17, 21, and 25 have been amended. Claims 1-28 are pending, with claims 1, 16-17, 21, and 25 being independent. No claims have been cancelled. Claims 1-16 are the original patent claims of U.S. Patent No. 5,774,106 which is sought to be reissued by the present reissue application, and claims 17-28 were added when the present reissue application was filed.

A supplemental reissue declaration pursuant to 37 CFR 1.175(b) covering the changes to the present reissue application which have been made by the present amendment will be filed after receipt of an Office communication indicating that the application is in condition for allowance except for the filing of such a supplemental reissue declaration.

The Office Action of April 24, 2001, does not acknowledge the claim for priority in the claim for priority of June 2, 1999, and in paragraph (8) on page 4 of the Reissue Declaration and Power of Attorney and Offer to Surrender Patent signed by the applicants on July 6, 1999, and filed on July 23, 1999, and does not acknowledge that the certified copies of the two Japanese priority applications have been received in application Serial No. 08/464,133 which issued as U.S. Patent No. 5,774,106 which is sought to be reissued by the present reissue application as indicated in the claim for priority of June 2, 1999. Accordingly, it is respectfully requested that the Examiner acknowledge this in the next Office communication.

Claims 1-16 were rejected under 35 USC 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the applicants regard as the invention. This rejection is respectfully traversed.

In explaining the rejection, the Examiner states as follows:

In applicant's declaration, applicant states that the recitation of "simultaneously generates two different display voltages from selected display voltage level" is an error in the original claim 1, similar claimed language can be found in claim 16.. If there is an error in claims, applicant should amend claims to correct such error.

In this explanation of the rejection, the Examiner refers to the following statement which appears in paragraph (6) on page 2 of the Reissue Declaration and Power of Attorney and Offer to Surrender Patent signed by the applicants on July 6, 1999, and filed on July 23, 1999:

(6) At least one error of the patentees claiming more or less than the patentees had the right to claim in the original patent upon which reissue is based is the recitation in claim 1 of the original patent of "simultaneously generates two different display voltages from the selected display voltage level" and the failure in the claims of the original patent to claim the subject matter of the invention as recited in new independent claim 17 of the reissue application which sets forth

However, the recitation in original patent claim 1 of simultaneously generates two different display voltages from the selected display voltage level and the similar recitation

in original patent claim 16 referred to by the Examiner are not errors in the sense that these recitations are errors per se and should be deleted from original patent claims 1 and 16 or otherwise corrected in original patent claims 1 and 16 as apparently understood by the Examiner.

Rather, these recitations in original patent claims 1 and 16 are errors only for the purpose of reissue in the sense that these recitations made original patent claims 1 and 16 narrower than they needed to be in light of the prior art, i.e. they resulted in the applicants claiming less than they had a right to claim in the original patent. These errors in the original patent have been corrected in the present reissue application by the addition of new claims 17-28 which do not include such recitations.

Accordingly, it is submitted that the rejection of claims 1-16 under 35 USC 112, second paragraph, as being indefinite is improper, and it is respectfully requested that the rejection of claims 1-16 under 35 USC 112, second paragraph, be withdrawn.

Claims 1-16 were not rejected over the prior art, but were only rejected under 35 USC 112, second paragraph. Since this rejection is considered to have been overcome for the reasons discussed above, it is submitted that claims 1-16 are now in condition for allowance except for the filing of a supplemental reissue declaration pursuant to 37 CFR 1.175(b), and an indication to that effect is respectfully requested.

Claims 17-28 were rejected under 35 USC 103(a) as being unpatentable over Tanioka et al. (Tanioka) in view of Ohi. This rejection is respectfully traversed insofar as it may be deemed to be applicable to claims 17-28 in their present form.

In explaining the rejection, the Examiner states as follows:

As to claim 17-28, Tanioka discloses a liquid crystal display device comprising: a liquid crystal panel (10, Fig. 1) having a plurality of columns and a plurality of rows for displaying an image in accordance with display data; and a data driver coupled to the liquid crystal panel, the data driver having an input terminal and a plurality of output terminal, each of the output terminals (e.g. the output of the sample hold circuit 22 and 32) corresponding to each of at least a part of the columns of the liquid crystal panel, the display voltages including a set of positive and negative polarity gray scale voltages corresponding to each of gray scales, a selector (70, Fig. 1) for selecting one of the plurality of display voltages in accordance with each of the display data and a horizontal position of each of the output terminals corresponding to each of the display data (see Figs. 2a-2d), and an output circuit for outputting the selected one of the display voltages to the each of the output terminal; wherein two of the selected one of the display voltages which correspond to adjacent two of the output terminals have different polarity (see Figs. 2a-2d).

It is noted that Tanioka does not specifically disclose a data driver including a generator for generating a plurality of display voltages. However, using a generator for generating a plurality of display voltage in a column driver is well known in the art such as taught by Ohi (see element 20 in Fig. 2 of Ohi). It would have been obvious to one of ordinary skill in the art to have modified Tanioka with the features of the voltage generator as taught by Ohi because

Ohi's can provide an analog driving to the column of the LCD instead of a digital data driving.

The third paragraph of independent claim 17 has been amended as follows, with underlining indicated added material:

a data driver coupled to said liquid crystal panel, said data driver being arranged on a single side of said liquid crystal panel, said data driver having an input terminal and a plurality of output terminals, each of said output terminals corresponding to each of at least a part of said columns of said liquid crystal panel, said data driver including

The first paragraph of independent claim 21 has been amended as follows, with underlining indicated added material:

21. A data driver for coupling to a liquid crystal panel, said liquid crystal panel having a plurality of columns and a plurality of rows for displaying an image in accordance with display data, said data driver being arranged on a single side of said liquid crystal panel, said data driver having an input terminal and a plurality of output terminals, each of said output terminals corresponding to each of at least a part of said columns of said liquid crystal panel, said data driver comprising:

The second paragraph of independent claim 25 has been amended as follows, with underlining indicated added material:

providing an input terminal and a plurality of output terminals, said output terminals being coupled to said liquid crystal panel, said output terminals being arranged on a single side of said liquid crystal panel, each of said output terminals corresponding to each of at least a part of said columns of said liquid crystal panel;

The feature said data driver being arranged on a single side of said liquid crystal panel which has been added to

claims 17 and 21 and the feature said output terminals being arranged on a single side of said liquid crystal panel which has been added to claim 25 are shown, for example, in Fig. 1 of the present application which shows eight data drivers 109-1 to 109-8, each having 240 output terminals, which are arranged on a single side of a liquid crystal panel 135.

See, for example, the first paragraph under "SUMMARY OF THE INVENTION" on page 3 of the specification of the present application which reads as follows (emphasis added):

An object of the present invention is to provide a liquid crystal driver for performing alternate-column inversion drive in which liquid crystal cells are driven so as to be inverted on alternate columns in order to obtain high image quality while one data driver is arranged in a single side of a liquid crystal panel in order to reduce the size and weight of a liquid crystal display, that is, in order to reduce a liquid crystal panel driving circuit for the purpose of high-density mounting, and to provide a liquid crystal display device using the liquid crystal driver.

lines 12-13 of the first paragraph under "DESCRIPTION OF THE PREFERRED EMBODIMENTS" on page 5 of the specification which read as follows:

The reference numerals 109-1 to 109-8 designate data drivers for 240 outputs;

and lines 15-16 of the first full paragraph and lines 1-4 of the second full paragraph on page 6 of the specification which read as follows:

and 135, a liquid crystal panel of 640 dotsx480 lines.

In FIG. 1, eight data drivers are required because the number of outputs

from each of the data drivers 109-1 to 109-8 is 240 and because the resolution of the liquid crystal panel 135 is 640×RGB×480 pixels.

In contrast, Figs. 1 and 3 of Tanioka show data drivers 20 and 30, each having a plurality of output terminals, which are arranged on two sides of a liquid crystal panel 10, rather than on a single side of a liquid crystal panel as recited in claims 17, 21, and 25.

Also, Figs. 1-3, 6A, 7, and 8A of Ohi show data drivers 11/11A and 12/12A, each having a plurality of output terminals, which are arranged on two sides of a liquid crystal panel 9, rather than on a single side of a liquid crystal panel as recited in claims 17, 21, and 25.

Although Figs. 5-9 of Tanioka appear to show a data driver 20, having a plurality of output terminals, which is arranged on a single side of a liquid crystal panel 10, it is submitted that the embodiments in Figs. 5-9 of Tanioka do not include the feature recited in the last paragraph of claims 17, 21, and 25 wherein two of said selected one of said display voltages which correspond to adjacent two of said output terminals have different polarity.

Rather, it is submitted that in the embodiments in Figs. 5-9 of Tanioka, the display voltages which are output from output terminals Q_1 , Q_2 , Q_3 , . . . of data driver 20 all have the same polarity, and this same polarity is inverted after each field by polarity reversing circuit 60 which is described as follows in column 7, lines 7-11, of Tanioka which reads as follows:

It is to be noted that 60 is a polarity reversing circuit which reverses the picture signal in polarity at the field period with the control signal such as a vertical synchronous signal or the like.

Accordingly, for the reasons discussed above, it is submitted that Tanioka and Ohi do not disclose or suggest the feature said data driver being arranged on a single side of said liquid crystal panel which has been added to claims 17 and 21; or the feature said output terminals being arranged on a single side of said liquid crystal panel which has been added to claim 25; or the feature recited in the last paragraph of claims 17, 21, and 25 wherein two of said selected one of said display voltages which correspond to adjacent two of said output terminals have different polarity.

Since Tanioka and Ohi do not disclose or suggest the features of independent claims 17, 21, and 25 discussed above, it is submitted that independent claims 17, 21, and 25 and claims 18-20, 22-24, and 26-28 depending therefrom patentably distinguish over Tanioka and Ohi in the sense of 35 USC 103(a), and it is respectfully requested that the rejection of claims 17-28 under 35 USC 103(a) as being unpatentable over Tanioka in view of Ohi be withdrawn.

Although dependent claims 18-20, 22-24, and 26-28 are considered to be allowable by virtue of their dependency from allowable independent claims 17, 21, and 25, it is noted that these dependent claims also recite further features of the present invention which are not seen to be disclosed or suggested by the prior art.

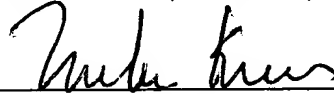
As recognized by the Examiner, the other references cited but not relied upon neither disclose nor suggest the present invention, and thus no further discussion of these other references is deemed necessary at this time.

It is submitted that all of the Examiner's rejections have been overcome, and that the application is now in condition for allowance except for the filing of a supplemental reissue declaration pursuant to 37 CFR 1.175(b). Reconsideration of the application and an action of a favorable nature are respectfully requested.

To the extent necessary, the applicants petition for an extension of time under 37 CFR 1.136. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, or credit any overpayment of fees, to the deposit account of Antonelli, Terry, Stout & Kraus, LLP, Deposit Account No. 01-2135 (500.33793R00).

Respectfully submitted,

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